DOCUMENT RESUME

ED 106 339 TM 004 454

AUTHOR Sebatane, E. Molapi
TITLE Selection and Admission Procedures at the University of Botswana, Lesotho and Swaziland (UBLS).
PUB DATE [Apr 75]
NOTE 23p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, D.C., March 30-April 3, 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS *Academic Achievement; *Academic Standards; Achievement Tests; Admission Criteria; *College Admission; *College Entrance Examinations; Competitive Selection; Foreign Countries; Testing; *Testing Problems
IDENTIFIERS Africa; Botswana; Lesotho; Swaziland; *University of Botswana Lesotho and Swaziland

ABSTRACT

The University of Botswana, Lesotho and Swaziland (UBLS) is a regional four-year liberal arts university influenced by the British educational system. Admission to UBLS is contingent on: (1) scoring high on the Cambridge Overseas School Certificate (COSC), (2) scoring high on the General Certificate of Education (GCE) Examination, (3) scoring high on the Joint Matriculation Board (JMB) Examinations, (4) meeting the Mature Age Entry Scheme, or (5) meeting the qualifications of the Governmental Policies and Manpower Development Programs. The COSC is used as the main selection criterion for admission to UBLS. Questions are raised about the relevance of British educational programs to the African situation. Emphasis is placed on the adaption of education to local requirements and the need for re-examination of selected criteria. (BJG)

ED106339

Selection and Admission Procedures at the University of Botswana, Lesotho and Swaziland (UBLS)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

E. Molapi Sebatane*
Regional Testing Resource and Training Centre
Zomba, Malawi

TM 004 454

Paper presented at the Symposium on Measurement Procedures Employed by Various Countries in the Selection of College Students, the Annual Meeting of the American Educational Research Association, Washington, D. C., March 30 - April 3, 1975.

*Currently at the Programs in Educational Research Methodology, University of Pittsburgh

Introduction

The University of Botswana, Lesotho and Swaziland (UBLS) is a regional four-year liberal arts university serving primarily the three countries whose names it bears. It was established in January 1, 1964 under the British Royal Charter, and replaced Pius XII College which was established in 1945 by the Roman Catholic hierarchy of South Africa. UBLS is now supported by the three governments of Botswana, Lesotho and Swaziland. Originally there was only one campus in Lesotho, but in 1971 campuses offering the first two years of study were started in the other two countries. Students transfer to the Lesotho campus to complete their Bachelors degree programs. The Agricultural College and University Centre in Swaziland is part of the University although students there do not have to transfer to the Lesotho campus. There are some teacher training colleges in some of these countries which are affiliated with the University. UBLS offers limited graduate programs, up to Master's degree.

The educational systems in the three countries are basically similar to and are patterned after that of Britain. This is illustrated in Figure 1. Pupils go through primary education, after which they write external examinations. Those who pass these examinations can proceed to secondary school. Secondary education is divided into two parts. The first part consists of three years after which students take an external examination (conducted by UBLS). Those students who succeed receive a Junior certificate and can either continue on to the second part, comprised of the last two years, or can go to vocational and technical schools or to teacher training institutions. At the end of the fifth year the "academic" students take another external examination, the Cambridge Overseas School Certificate (COSC)

Examination, which will qualify them for a high school leaving certificate and which may qualify them to go to the University. It is important to note that, like in most other African countries, education is not compulsory at any level.

UBLS Admissions Policies

Admission to one of the Bachelors degree programs of the University may be obtained by qualifying under one of five procedures: (1) scoring high on the COSC, (2) scoring high on the General Certificate of Education (GCE) Examination, (3) scoring high on the Joint Matriculation Board (JMB) Examinations, (4) meeting the qualifications of the Mature Age Entry Scheme, (5) meeting the qualifications of the Government Policies and Manpower Development Programs. These procedures are shown in Figure 2.

As is illustrated in this figure, students may also apply for admission to one of the diploma or certification programs* offered by the University. This paper will not, however, deal with entry requirements for these latter programs. Rather, it will focus on the procedures by which students may gain admission to the regular Bachelors degree programs.

The Cambridge Overseas School Certificate Examinations. The basic way of being admitted to UBLS is by scoring well on the Cambridge Overseas School Certificate Examinations. These examinations are primarily essay-type achievement examinations and are administered

*Note that "diploma" or "certificate" refers to special programs of study offered by the University in a variety of disciplines or subjects at less than a Bachelors degree level. After completing one of these programs of study, a student is usually certified as a skilled professional in the appropriate discipline.

under the auspices of the University of Cambridge Local Examination Syndicate in Britain. For the three countries which are the subject of this paper, the COSC examinations are administered to all students who are completing the fifth year of secondary education. This is known as the Ordinary or "O" level of the examinations*. The examinations serve both to certify completion of secondary education and as admissions examinations for the University.

To understand these examinations it is necessary to understand the relationship between the examinations and the high school academic curriculum. The Cambridge Syndicate specifies curricular subject-matter areas and syllabuses for which it will develop and administer examinations. For Botswana, Lesotho, and Swaziland the curricular areas are shown in Table 1. In any one year, the Syndicate will provide examinations in each one of the indicated areas.

Although there are curriculum syllabuses and examinations for each area, a local high school is free to choose the particular subject-matter areas it wants to teach. The exception is English Language which must be taught by all schools. Thus, for example, one school

---

*COSC examinations are offered in various parts of the world, particularly in British Commonwealth countries, at both the Ordinary or "O" level and the Advanced or "A" level. The "O" level involves the content of the first four or five years of secondary school education. The "A" level is designed for students who go to secondary school for two or more additional years and who specialize in certain subjects -- usually three or less. Both levels are used by many Commonwealth countries as entrance examinations to higher education (Priestley, 1966; Sasnett and Sepmeyer, 1966). There may be supplementary selection tests as well, depending on the country involved. Although Botswana, Lesotho, and Swaziland do not have extended "A" level programs, UBLS does allow admission " . . . directly into the second year of study, provided that [the candidate] har taken and passed at A-level, or its equivalent, at least one of the two subjects he intends to follow as major subjects for the Degree" (UBLS Calendar, 1974, p. 73).

may teach English Language, two of the general subjects, one of the languages, one of the mathematics subjects, two of the science subjects, two of the Arts and Crafts subjects, and none of the Technical subjects. Another school may have an entirely different combination of subjects. To further add to the heterogeniety across schools, students within a school may elect to take different subjects. It also happens, that for any one subject area, say History for example, there may be several alternative syllabuses from which a school may choose. If this happens, then the History that is taught will differ from school to school. Thus, although examinations are developed for all of the subject areas, any one student will take only a subset of them.

The time units for the examination vary with the subject matter. The questions for each examination vary from year to year. The tests are non-standardized, although the level and general content may be the same for a given subject each year.

For each subject area the examinations are scored by the Cambridge Syndicate on a percentage basis. The percentages are converted to "quality" statements and to grade points. These are shown in Table 2. In order to receive a certificate, a student must meet minimum score requirements as follows (Sasnett and Sepmeyer, 1966, p. 1407):

(a) reach a satisfactory general standard in their best 6 subjects, and

either (b) pass in at least 6 subjects (including English Language) with credit in at least one of them,

or (c) pass in 5 subjects (including English Language) with credits in at least 2 of them.

Students who qualify for the certificate are further classified into three categories, called Divisions. To determine the division into which a candidate falls, an agregate is computed by adding the grade points corresponding to the six subject examinations on which (s)he scored highest. These are shown in Table 2 (b). Sasnett and Sepmeyer (1966) state that, in order to be in first division, a candidate would need to pass in six or more subjects with credits in at least five of them, including English Language. To qualify for second division, a candidate has to pass six or more subjects with credits in at least four of them. The third division would be for those with less than the above performance levels.

Given this information, we can now discuss admission to the university by this route. The minimum requirement for entrance to the regular Bachelors degree program is a Cambridge Overseas Certificate with COSC examination aggregate in the first and second Division, and with at least a credit in the English Language test. (If the student intends to apply for a General B.S. or B.S. in Agriculture*, then, in addition, he needs at least a credit in the mathematics test.) However, the candidate's qualifying examinations must not include more than one of those under Arts and Crafts group nor more than one of those under Technical and Commerical group.

General Certificate of Education. As shown in Figure 2, the COSC examination is only one of several routes to admission to the University. Another route is the General Certificate of Education (GCE) examination offered by the University Entrance and Examinations Council of the University of London. This examination is intended

*B.S. and B.S. in Agriculture are regarded as two distinct Bachelors degree programs.

primarily for those candidates who do not take the regular COSC examinations in school and who have to study for the GCE independently. The examination is administered at centers in the British Commonwealth countries.

The examination is offered at both the Ordinary ("O") level and at the Advanced ("A") level.

> One of the main differences between the G. C. E. and the [COSC] is the fact that the former is a 'subject' examination. This means that candidates may take the examination and get certificates in as few as three or two subjects or perhaps only one [subject] . . . Candidates may take as many sittings as they wish; they may take different subjects at the same level in different years, or they may take some subjects at 'O' level and some at 'A' level in the same year. (Priestley, 1966, pp. 94-95.)

The GCE is supposed to be of higher standard than COSC. Normally, a pass on the GCE is regarded as an equivalent of a credit on the COSC.

In Botswana, Lesotho, and Swaziland, candidates with a Junior Certificate or higher can prepare for the GCE "O" level examination. Few students, if any, take "A" level examinations.

The GCE's are mostly essay-type. They are held in January and June. The syllabuses and standards for GCE are set by the Examinations Council of the University of London and are revised periodically. A candidate is free to choose any number among a long list of subjects offered by the GCE within certain restrictions. In general, however, a candidate has a wider freedom of subject choice than is the case with COSC.

The grading system is more or less the same as for COSC, only the percentage marks are set higher than for the corresponding COSC grade points. These are shown in Table 3.

The minimum requirements for admission to UBLS via this examination are:

(a) taking the "O" level examination in at least six subject areas in not more than two sittings.

(b) passing at least four subject area tests, including English Language. However, just as is the case with the COSC examination, the four subjects cannot include more than one from the Arts and Crafts group and not more than one from the Technical and Commerical group. Candidates seeking admission to the bachelor's program in either General B.S. or B.S. in Agriculture, must, in addition, take and pass the mathematics test.

(c) having a grade point aggregate of less than or equal to 34 for the six subjects.

Joint Matriculation Board Examinations. As shown in Figure 2, a third route to admission to UBLS is by passing the Joint Matriculation Board (JMB) examinations. The JMB's are entrance examinations required by the universities in the Republic of South Africa. In South Africa, high school leavers take the Senior Certificate Examinations to qualify for secondary school certification. If a student scores high enough on the Senior Certificate Examinations, he is exempt from taking the JMB's and meets the minimum South African University admission requirements. Such a student is awarded a "Matriculation Exemption." Students who are not exempt and who take and pass the JMB's are awarded a "Matriculation Certificate."

The JMB's are developed by a Board composed of representatives from all universities in South Africa. The examinations c ver a wide range of school subjects (Sasnett and Sepmeyer, 1966). Most languages, including English, are tested at two levels: Lower Grade Level and Higher Grade Level*.

*The difference between the two levels are in the degree of competence, the standard, the amount of work, and the quality of performance required.

The UBLS recognizes the entrance requirements of the South African Universities. Thus, a South African student who has either a Matriculation Exemption or a Matriculation Certificate can be admitted provided that (s)he has passed English at the Higher Grade Level and, if applying for Ordinary B.S. or B.S. in Agriculture programs, passed mathematics. Students from Botswana, Lesotho, and Swaziland can meet UBLS admission requirements if they take the JMB's and obtain a Matriculation Certificate, provided that they meet the English and mathematics requirements stated above. Students from Botswana, Lesotho, and Swaziland must prepare for the JMB's on their own.

Mature Age Entry Scheme*. The remaining two routes to university admission shown in Figure 2 are designed to identify those who might succeed at the university level but have either not successfully completed high school or do not meet the other academic requirements. One of these programs is called the Mature Age Entry Scheme.

This program started around 1971 and its aim is to test the candidate's potential for university study rather than his previous academic achievement. Applicants have to be at least 25 years of age. Usually, these people are already established in their respective jobs.

The Mature Age Entry examination is a package of tests developed by various bodies. It has three sections: a series of multiple-choice aptitude tests (known as the I. D. tests), a multiple-choice English comprehension test, and an essay paper.

---

*The author wishes to thank specially Mr. Crowley, Chairman of the Senate Committee of the Mature Age Entry examination who provided most of the information for this section.

The I. D. (Internationally Developed) aptitude tests were originally developed in West Africa in the early 1960's by a team from the American Institutes for Research under the support of USAID (Schwarz & Krug, 1972; Snider, 1972). They have been successfully adapted and normed in places like Brazil, South Korea, and Thailand. For the Mature Age Entry Scheme, the tests have been adapted, normed, and administered by the Regional Testing Resource and Training Centre, a professional and research organization serving Botswana, Lesotho, Swaziland and Malawi. Table 4 shows some of the I. D. tests.

The English Comprehension paper developed by the UBLS Division of Extramural Services is a reading passage followed by forty-nine or so multiple-choice questions. Simple analysis of the test results has shown that this paper provides useful additional information for selection purposes.

The essay paper is designed to test English language, creative usage, and the ability to organize and present material and ideas in a logical manner. A certain situation is presented and the candidate is to write an essay about it. The essays are not routinely graded, however. The essays of those candidates who are recommended for an admissions interview are sent to the interviewing panels as additional information. The only importance of this test seems to be that UBLS uses essay questions in its examinations.

The I. D. and English Comprehension test scores are aggregated and the candidates whose aggregate scores fall above a cut-off point are interviewed. The cut-off is rather arbitrary and is based on the distribution of scores and the required university quotas. The interview recommendations are sent to the university admission committees and to government scholarship committees.

Few candidates have been admitted to UBLS through the Mature Age Entry Scheme. The average is about ten candidates per year from each country. Isolated studies have examined the program's effectiveness. They show that some candidates selected through this scheme perform better than the rest of the other students in their degree courses.

Government Policies and Manpower Development Programs. The final route to be discussed here is that of the various countries' government policies and manpower development programs. The policies of the various governments differ in certain aspects but most of their problems are similar. One problem is the concern for economic development, for which manpower training is important. Most often, each government wants a certain number of their students to do certain courses. If they cannot meet their quotas, they can recommend admission for certain students who otherwise would not be admitted. For example, a student classified in the Third Division by the COSC examinations but who had performed well in secondary school courses related to his/her intended university studies, can apply to the University under this program. Such students may be admitted, if they want to take courses regarded as potentially important to a country's economic development.

Government Policies and Scholarship Funds

Before going on, it should be noted that qualifying for admission to UBLS by way of one of the five routes discussed above does not guarantee that a student can attend and complete his/her program of studies. As in any other university the question of fees is important. But it is even more important in that part of the world where almost every parent cannot afford to pay for his or her child's entire university education. Each of the three governments has a scholarship

committee which interviews students and allocates scholarships. But the fact that a student is qualified is no guarantee that a student will be given the scholarship. The availability of funds, manpower projections, and needs are the determining factors. Some governments give students loans. This is a contract between government and student. The student agrees that after graduation he will repay the government, usually not in cash, but by working for the government or in the country for a specified period of time. UBLS has limited number of scholarships in the form of outside donations. Students can apply for these scholarships only as a last resort. However, in all cases when allocating scholarships, governments give priority to those who want to pursue courses which are consistent with the countries' manpower projections.

Discussion, Conclusions, and Recommendations

Economic and social development is one of the main problems facing African countries today. Education is a major tool for solving these problems. It can only be an effective tool if the countries concerned can shape it to meet their needs. Adesina (1973) has strongly criticized the practice of having alien-examining bodies conduct entrance examinations to higher education in Africa. These bodies dictate the standards and set the syllabuses. This tends to retard progress toward adaptation of education to local needs. If African countries are to set their own pace of development they have to control their educational programs rather than follow those set in Britain, otherwise there will be conflict. The relevance of the COSC curriculum to the African situation is open to questioning (e.g., Somerset, 1968).

Adesina (1973) notes that if the adaptation of education to local requirements is to be realized, then both the curriculum and the

evaluation of students must be under local control. Currently, the "single, one-shot examination" shapes the whole future of most students. As Aleyideino (1973) has pointed out,

> an external testing procedure which invariably relies on only one examination technique . . . is hardly appropriate for revealing the diversity of intellectual abilities exhibited by students in the classroom. (p. 8)

UBLS should seriously decide whether it should continue using the "division" system of COSC as the main selection criterion. It may be that many students are denied admission to UBLS, not because they lack the ability, but because of inadequate selection criterion.

Another issue of importance is the COSC system of grading examinations and its relationship to the syllabuses used by schools and the subjects taken by students. Except for English Language, schools have the freedom to choose subjects which they want to teach. Similarly, each student is free to choose the combination of courses he or she takes, within the limits imposed by the particular school. In most cases students choose courses in which they think they will do well. The general trend is that some students will take mostly science courses, while others will pick "non-science" courses (Somerset, 1968). Students tend to choose courses which require "similar intellectual skills." Somerset has shown that, at least in Uganda, male students tend to prefer sciences, while female students choose non-science courses. Thus, a candidate may score very high on the COSC in a given combination of subjects he or she likes and has ability in, say science subjects. But if the aggregate puts the student in less than the first or second Division, the chances of being admitted to UBLS are slim. There is no reason to believe that if such a student were admitted to do degree work in science courses, (s)he would not do well, particularly if the student has a good high school academic record.

Another problem of using only academic achievement as selection criteria for African countries is that there are large variations in quality among schools (Somerset, 1968). Students may score poorly because they went to a poor school. In situations like these, supplementary selection devices become useful.

Two alternative recommendations can be made. One is that UBLS, with the assistance of the three governments and the Regional Testing Resource and Training Centre, might develop supplementary selection procedures. There is adequate expertise to do this job. A more "radical" recommendation is that UBLS might take over the high school leaving examinations. This might take time and energy, but it may be worth the effort. The West African Examination Council has done this and it is working well (see Test Development and Research: West African Examinations Council, "Final Report," 1973). UBLS should be involved in the preparation and evaluation of potential applicants.

As long as the preparation of students is undertaken by another institution, it is the students themselves who will be caught in the middle. This is shown, for example, in the case where UBLS will not admit students whose qualifying examination subjects include more than one from either group VI (Arts and Crafts) or group VII (Technical and Commercial subjects). However, it has no control over what courses schools can offer. Such powers lie primarily with the University of Cambridge Local Examinations Syndicate.

References

Adesina, S. Challenges of educational leadership in New African States. Educational Yearbook: 1973-74, Mcmillan Educational Corporation, 1973, pp. 246-250.

Aleyideino, S. C. The nature, place and influence of tests and measurement procedures in education. The West African Journal of Educational and Vocational Measurement, Vol. 1, No. 1, February 1973, pp. 1-13.

Minutes of UBLS Senate Committee of the Mature Age Entry Examination (Gaborone Campus, 2nd January, 1974)

Priestley, B. British Qualifications, London: Kogan Page Ltd., 1966.

Regional Testing Resource and Training Centre. UBLS Mature-Age-Entrants Research Scheme: Term of Reference, 1973. (document)

Sasnett, M. & Sepmeyer, I. Educational systems of Africa. Berkeley and Los Angeles: University of California Press, 1966.

Schwarz, P. A. & Krug, R. E. Ability testing in developing countries: A handbook of principles and techniques. New York: Praeger Publishers, 1972.

Snider, J. G. Aptitude tests for West Africa. The West African Journal of Education, Vol. XVI, No. 2, June 1972, pp. 171-177.

Somerset, H. C. A. Predicting success in school certificate: A Uganda case study. Nairobi: East African Publishing House, 1968.

Test Development and Research: West African Examinations Council, Final Report, 1973.

UBLS Calendar, 1974.

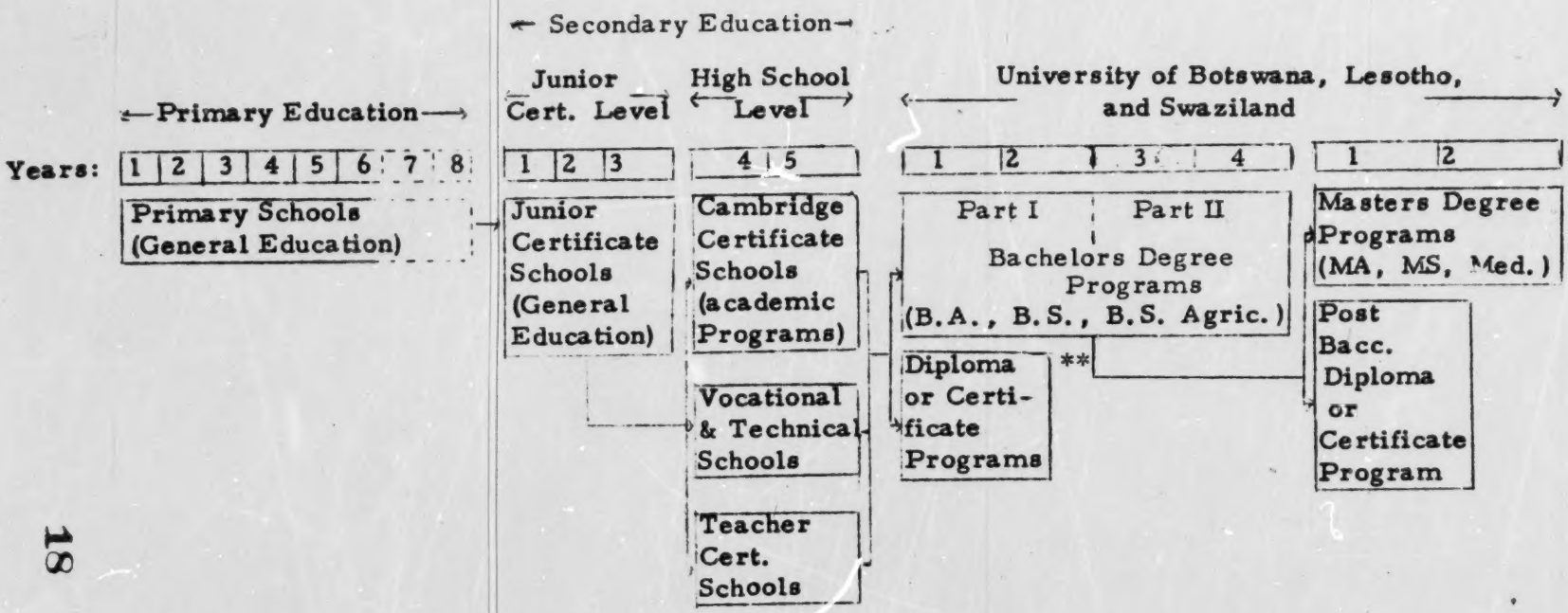
UBLS Council Admissions Policy (document c. 74/53).

UBLS: Handbook for applicants, 1974.

UBLS Examinations Council. Subjects of examination and conditions for the award of certificates (for COSC and GCE). (document)

University of Cambridge Local Examinations Synidcate: Syllabuses: Joint Examinations for the School Certificate and G. C. E. and the Higher School Certificate and G. C.E. (Art and Music, 1968; Technical and Commerical subjects, 1969: Mathematical subjects, 1968; History, Economic and Public Affairs, Geography, Geology, 1968).

University of London Regulations and syllabuses for the General Certificate of Education Examination held overseas, June 1968 and January 1969. Also June 1969 and January 1970.



*Note that (a) schooling is not compulsory and (b) admission to a higher level is contingent upon passing certification examinations at the preceeding level.

**Special programs for 1 year of full-time study or equivalent in part-time study. Results in awarding of Diploma in Education, Certificate in Teaching mathematics, Diploma in Agriculture, Diplomas in Law, etc.

Figure 1. General Outline of the Educational System for Botswana, Lesotho, and Swaziland*

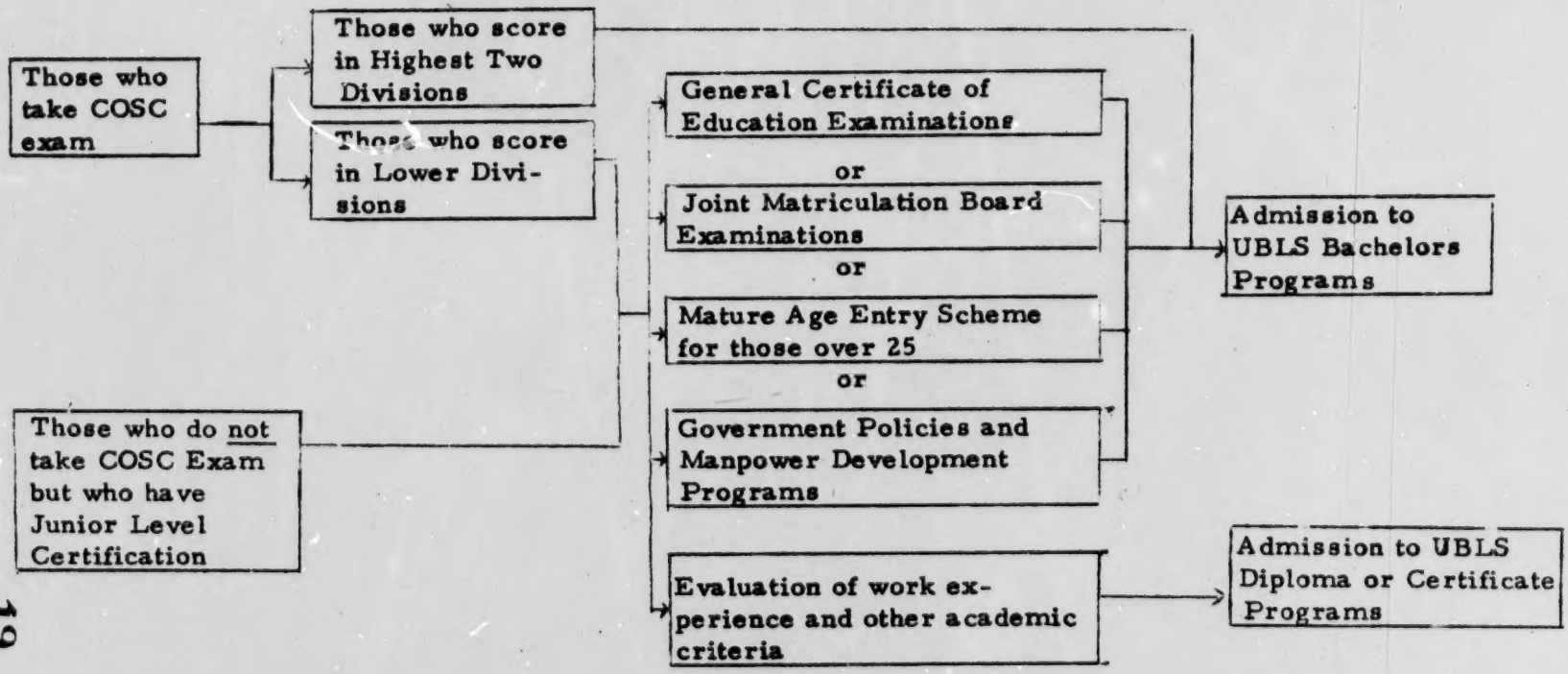

Those who take COSC exam
Those who score in Highest Two Divisions
Those who score in Lower Divisions
Those who do not take COSC Exam but who have Junior Level Certification
General Certificate of Education Examinations
or
Joint Matriculation Board Examinations
or
Mature Age Entry Scheme for those over 25
or
Government Policies and Manpower Development Programs
Evaluation of work experience and other academic criteria
Admission to UBLS Bachelors Programs
Admission to UBLS Diploma or Certificate Programs

Figure 2. Schematic Illustration of the Various Ways Students May Gain Admission to UBLS Bachelors or Diplomas Programs

Table 1. Cambridge Overseas School Certificate Subject-matter Groupings and Specific Subjects Taught in Various Schools in Botswana, Lesotho and Swaziland

Subject-Matter Grouping	Specific Subjects (or Courses)
I. English Language (compulsory)	
II. General Subjects	English Literature, Bible Knowledge, History, Geography, Classics in Translation.
III. Languages	Latin, Greek, French, German, Spanish, other approved languages (in our case: Setswana for Botswana, Sesotho for Lesotho, and Zulu for Swaziland students).
IV. Mathematical Subjects	Mathematics, Additional Mathematics.
V. Science Subjects	General Science, Additional General Science, Agricultural Science, Physics, Chemistry, Biology, Human and Social Biology, Physical Science.
VI. Arts and Crafts	Art, Music, Woodwork, Metalwork, Metalwork (Engineering), Needlework and Dressmaking, Cookery, General Housecraft.
VII. Technical and Commercial subjects	Engineering Science, Surveying, Geometrical and Mechanical Drawing, Geometrical and Building Drawing, Commerical Studies, Commerce, Principles of Accounts.

Note that all candidates must take the examination in at least six, and not more than nine, subjects. These must include English Language and subjects chosen from at least three of the groups II, III, IV, V, VI and VII.

Table 2. Grading System for the "O" Level COSC Examination

Part A[a]

Percentage Score	Quality (standard)	Grade Point
80-100	Very Good	1
75- 79	Very Good	2
70- 74	Credit	3
65- 69	Credit	4
60- 64	Credit	5
50- 59	Credit	6
41- 49	Pass	7
34- 40	Pass	8
0 - 33	Fail	9

Part B[b]

Division	Aggregate
1st	23 or less
2nd	Between 25 and 34
3rd	34 and above

[a]Note that the word "credit" may be used as a general term to describe any level of performance above just a mere pass in a subject, so that any score between 50 and 100 percent in a subject may be called a "credit."

[b]Note an inverse relationship here. The lower the aggregation the higher the division (and therefore the better the performance).

Table 3. Grading System for the "O" Level General Certificate of Education Examination*

Scaled Mark**	Symbol	Grade
75+	A	1
70-74	B	2
60-69	C	3
55-59	D	4
50-54	E	5
45-49	O	6
42-44	F	7
35-41	G	8
0-34	H	9

*Taken from Sasnett and Sepmeyer (1966, p. 1424).

**"Scaled marks" here refer to percentage marks

Table 4. Summary of Some of the I. D. Aptitude Tests*
Used in the Mature Age Entry Scheme

Test	Testing Time	No. of Items	Concept Tested
(a) Verbal Analogies Low	30 minutes	40	Verbal reasoning
(b) Verbal Analogies	30 minutes	40	Advanced form of verbal reasoning
(c) Memory	20 minutes	80	Learning and memory of meaningful material
(d) Reading Comprehension Low	30 minutes	40	Reading and understanding of written material
(e) Reading Comprehension High	30 minutes	40	Advanced form of above
(f) Graphs	25 minutes	60	Solving complex problems
(g) Arithmetic	20 minutes	150	Simple computations
(h) Science Information	30 minutes	40	Interest in science
(i) World Information	30 minutes	40	Interest in business or public affairs

*Adapted from Snider (1972, p. 172).